

ARTICLE



Armed Drones and Ethical Policing: Risk, Perception, and the Tele-Present Officer

CHRISTIAN ENEMARK 

Ethical analysis of armed drones has to date focused heavily on their use in foreign wars or counterterrorism operations, but it is important also to consider the potential use of armed drones in domestic law enforcement. Governments around the world are already making drones available to police for purposes including border control, criminal investigation, rescue missions, traffic management, and the monitoring of public assemblies. Unarmed and controlled remotely, these camera-equipped aircraft provide a powerful and mobile surveillance capacity that can be highly effective in detecting suspicious activity and guiding police operations. In addition, for situations where criminal violence presents a danger to public safety, some governments appear to be readying their police to neutralize threats using drones that are also equipped with weapons. In anticipation of that potential development, this article discusses whether or how police should use armed drones. It applies some of the established ethical principles on police use of force (necessity, proportionality, and precaution), and it explores some of the challenges a drone-using, “tele-present” police officer is likely to face in seeking to adhere to those principles.

Keywords: drones, ethics, police, risk, use of force, weapons

Introduction

On 29 May 2020 a Predator-class drone diverted south from its

routine patrol of the US–Canadian border and then circled in the sky above the city of Minneapolis for around three hours.¹ Public protests were under way there following the killing of George Floyd by local police officer Derek Chauvin four days previously. The remotely

Christian Enemark is Professor of International Relations at the University of Southampton. Email: c.enemark@soton.ac.uk

controlled aircraft, operated by US Customs and Border Protection (CBP), carried no weapons, but it had a mounted camera for transmitting video footage of events on the ground. It was reportedly deployed to Minneapolis to “aid in situational awareness” at the request of “federal law enforcement partners.”² Later, however, thirty-five members of Congress criticized this use of a military-grade drone to surveil protesters inside the United States, arguing that such surveillance could be unduly intimidating and could have an unwelcome “chilling effect” on participation in public life.³

The deployment for a law enforcement purpose of such a large drone (capable of bearing heavy payloads and flying at high altitudes for long periods) was nevertheless exceptional. Usually, in the United States and elsewhere, a “police drone” means a small, short-range, multirotor aircraft of the kind produced by civilian manufacturers and widely available commercially.⁴ But the use of these drones has generated concerns about the intrusiveness of police surveillance and its impact on individual privacy and freedoms, too. For example, during the COVID-19 pandemic in 2020, police agencies in several countries used drones equipped with cameras (and sometimes loudspeakers) to monitor and enforce public compliance with social distancing rules.⁵ Sometimes, this prompted accusations that aerial surveillance in locked-down societies was breaching people’s privacy rights and exacerbating a “police state” atmosphere.⁶ The intrusiveness and privacy implications of (unarmed) drone use is an important and well-canvassed ethical issue on its own.⁷ It arises in the context of numerous

other technological developments with policing applications including, for example, closed-circuit television, long-range audio sensors, and online financial transaction monitoring.

In this article, however, the focus of attention is the potential use by police of small drones equipped with weapons as well as cameras, and the concern for human rights extends to the right to life which underpins ethical principles restraining police use of force. During the last two decades, armed drones have been extensively deployed over foreign territories, mainly by the US government. Drone strikes involving guided missiles have been carried out as part of armed conflicts in, for example, Afghanistan and Iraq. In this war paradigm, principles of military ethics (which underpin international humanitarian law) are applicable and these traditionally afford a broad moral permission for killing. By contrast, in non-war situations, where state violence is instead wielded within the peacetime paradigm of law enforcement, a more stringent morality based on human rights is applicable. According to several analyses of foreign drone use, the intentionally lethal use of armed drones “outside armed conflict” is likely to offend those rights,⁸ because the conventional restrictions on using force for law enforcement purposes are difficult to satisfy.⁹

In a domestic context, too, a drone-based targeted killing carried out by a government would likely be an abuse of human rights in the form of an extrajudicial execution.¹⁰ However, even if the violent use of a drone to perform a *punitive* law enforcement function is impermissible for this reason, it remains to be

considered whether an armed drone could properly be used as part of a state's *protective* (policing) effort to enforce the law. When former US president Barack Obama insisted that none of his successors should "deploy armed drones over U.S. soil,"¹¹ he was probably envisaging large (Predator-sized) drones launching Hellfire missiles with deliberately deadly effect. This differs, though, from a scenario in which a police officer's intention is not (or not solely) to kill and where they are using a drone armed, for example, with weapons not designed to be lethal. In such circumstances, it is worth asking: how (if at all) might the use of an armed drone satisfy the ethical principles that guide police use of force? And when (if ever) might it be morally permissible for police to use an armed drone against a criminal suspect or to protect public safety?

This article explores such questions by first describing the utility of drone technology for police purposes and then outlining the ethical principles that traditionally guide and

restrain police use of force. These principles inform the subsequent discussion of ethical challenges an officer is likely to face when remotely controlling an armed, camera-equipped drone. Drone use promises to reduce police exposure to danger, and this seems likely sometimes to yield the benefit of reduced risk of harm (caused by fearful officers) to criminal suspects and innocent bystanders. Weighing against this benefit, however, is the increased risk to the latter associated with any perception problems experienced by distanced police officers, as well as the risk that police remoteness might make public cooperation with policing efforts more difficult to achieve. At the time of writing, there have been no reports of armed drones being violently deployed by police anywhere in the world. Even so, as the next section shows, the requisite technology already exists, and some corporations, legislators, and non-government organizations have begun to anticipate the advent of police drone weaponization.

Arming Police Drones

For policing purposes, the utility of a camera-equipped drone lies mainly in its mobility and capacity for dynamic observation. Although a small, battery-powered drone cannot remain airborne for a long time, it is quieter and often more practical than a piloted helicopter and much cheaper to acquire and maintain. Such a drone can enter and remain in some spaces more easily than can a police officer and, in some circumstances, this capacity is preferable for a policing purpose. For example, a drone-based camera could be sent

in place of an officer to observe a crime scene (looking for clues) in detail without as much risk of disturbing the scene.¹² Police drones have also been used extensively in some countries for a public safety purpose: surveilling crowds during outdoor events such as public demonstrations and sporting matches. Here, drones enable police on the ground to estimate the number of people attending, track group movements, anticipate overcrowding, and accordingly employ crowd-control techniques such as roadblocks.¹³ In

the United States, these small aircraft have sometimes been able to obtain evidence of criminality in real-time, such as when a Miami-Dade police drone flying at 3,100 feet captured footage of a drug sale in Florida in late 2019.¹⁴ The following year, in California, a drone despatched from the Chula Vista Police Department's Drone as First Responder program filmed a suspect evading the police car pursuing him, throwing a gun away, and hiding a bag of what turned out to be heroin.¹⁵ On another occasion, when a man was suspected of firing a gun at his family, a camera-equipped police drone was deployed to survey the situation and to keep California officers "out of harm's way."¹⁶

In responding to the threat or actuality of violent crime, police sometimes do take physical risks in confronting suspects and might then carry some kind of weapon to protect themselves or others. The imagery obtained from an unarmed drone (of the position of an active shooter, for example) could vitally inform on-the-ground officers deciding when and how to take those risks for a threat-neutralization purpose. However, the question that has arisen in some law-enforcement circles is whether, if the drone *itself* were armed, a criminal threat could and should be neutralized in a way that exposes police to less danger.

As long ago as 2010, the CBP was reportedly interested in equipping its drones with "non-lethal weapons designed to immobilize" individuals identified as "possibly involved in illegal activity."¹⁷ In 2014, in the United States, a company called Chaotic Moon publicly demonstrated the operation of a taser-armed drone, delivering a powerful electric shock

to one of its interns (a volunteer), with a view to selling this technology to law enforcement personnel.¹⁸ In the same year, the South African company Desert Wolf launched sales of its Skunk Riot Control Copter, offering it to mining companies in the country as a means of responding to striking workers.¹⁹ This small, "octocopter" drone is marketed as being "designed to control unruly crowds without endangering the lives of the protestors or the security staff."²⁰ It is equipped with four high-capacity paintball barrels that can rapidly fire a large quantity of solid plastic balls, dye marker projectiles, or pepper spray balls, and the drone also carries loudspeakers enabling the communication of warnings to a crowd below it.²¹ In 2015, at the Milipol Paris homeland security exhibition, the French drone manufacturer Aero Surveillance unveiled its Multi-purpose Payload Launcher (MPL 30), which can reportedly carry up to eighteen tear gas grenades, for sale to law enforcement agencies.²² And, earlier that year, police in Lucknow—a city in the north of India—had reportedly purchased five of Desert Wolf's Skunk drones, which, according to senior superintendent of police Yashasvi Yadav, "can be used to shower pepper powder on an unruly mob in case of any trouble."²³

Meanwhile, North Dakota became the first US state to legislate in favor of police using drones armed with "non-lethal" weapons,²⁴ whereas several other US states had by then expressly prohibited any kind of drone weaponization.²⁵ Elsewhere, the issue of whether police may arm their drones remained largely unsettled, so in 2016 a team of researchers from Taser International (a company that

supplies police with stun guns and body cameras) met with potential customers at the International Association of Chiefs of Police (IACP) conference in San Diego, California. Company spokesperson Steve Tuttle explained at the time:

*Following recent events, including the use of a robot to deploy lethal force in Dallas to eliminate a highly dangerous threat, we've received questions about whether it would be feasible to similarly deploy a TASER from an autonomous vehicle. One can certainly imagine high-risk scenarios such as terrorist barricades where such a capability could allow public safety officers to more rapidly incapacitate a threat and save many lives.*²⁶

Tuttle was referring here to the Dallas Police Department's unprecedented use in July 2016 of a bomb-disposal robot (a land-based vehicle), armed with C-4 explosive, to kill a gunman who had just targeted and killed five police officers.²⁷ The raising of this example, however, implied the possibility that a remotely controlled *aerial* vehicle too could be armed with the intention of causing death rather than temporary incapacitation. A move to legitimize this possibility was made in Connecticut the following year, when a bill was proposed to exempt police "in limited circumstances" from a ban on drones equipped with deadly weapons,²⁸ though this was later defeated in committee.²⁹

The emergent temptation—operational and commercial—toward the use of armed drones for law enforcement purposes could be conceptualized as an example of what some authors call "police militarization."³⁰ According to Ian Shaw, for example, the drone has gradually evolved from being a surveillance platform to being an airstrike platform to

being, most recently, "a policing technology."³¹ Michael Salter has argued that "drones represents a new stage in the militarisation of policing,"³² and for Oliver Davis the "repatriation of the drone ... follows a familiar pattern whereby coercive security technologies are tested abroad before finding their way 'home' to arm police forces that are becoming increasingly paramilitary in style and conduct."³³

From a purely technological perspective, such claims can be refuted by differentiating between the large drones used militarily in foreign territories and the small drones that some police departments have in fact been acquiring for domestic use. Part of the normal pattern of militarization is that a state's police become armed with types of weapons that are also used (or have been used) by that state's military. This process tends to be criticized where "little thought [is] given to providing a weapon and ammunition specifically geared to the needs of civilian policing."³⁴ An example is the 1033 Program in the United States (instituted by section 1033 of the National Defense Authorization Security Act of 1997) which facilitates transfers of surplus military equipment such as mine-resistant vehicles, amphibious tanks and grenade launchers to local police departments.³⁵ In the case of drones, by contrast, it has not been the case that US police have been receiving and repurposing ex-military drones and the associated heavy firepower (Hellfire anti-tank missiles). Rather, police there and in some other countries have generally been purchasing smaller, commercially available drones (quadcopters, for example) of the kind used extensively by hobbyists and photographers.³⁶

Even so, a concern about militarization remains valid in relation to another of its aspects: the potential for military ideas and attitudes to influence ideas and attitudes about policing. This influence might be undesirable if, for example, police ethics (to be discussed in the next section) begins to be replaced by military ethics (which affords a greater degree of moral permission for harming people) as a guide to police action. A concern that this might happen is reflected in the image problem that drones in general continue to have. In the popular imagination, fed by media coverage of drone technology that focuses largely on airstrikes in war-zones, drones tend to be strongly associated with military-style violence.³⁷ This perception, acknowledged by the IACP, informs the Association's current policy position

that police drones "shall not be equipped with weapons of any kind."³⁸ The reasoning behind this position is couched in terms of likely public opposition to weaponization: the "public acceptance of airborne use of force is...doubtful," the IACP has explained, and this "could result in unnecessary community resistance" to the use of *unarmed* police drones.³⁹ However, this assessment by the world's peak professional body for police leaders appears to be a pragmatic rather than principled argument against arming police drones; logically, the IACP's opposition seems liable to diminish in line with any shift in public opinion. A stronger foundation for a policy position on this issue would be one that is instead couched in terms of the established ethical principles for police use of force.

Ethics of Police Use of Force

Where there is public concern that police drones could be used violently in the same way as military drones are, one source of reassurance is the longstanding expectation that police violence should be more restrained than military violence. The role of military personnel is (among many other things) to be ready one day to fight or support fighters in war, but police use force (on a more frequent basis) in the course of preventing crime and protecting public safety. This role difference is reflected in differing ethical standards for, on the one hand, police whose "protective" impulse is internally directed (to protect fellow citizens from each other) and, on the other hand, warriors whose "defensive" impulse is

often externally directed (to protect citizens from foreign enemies). For example, while it is morally permissible in the context of armed conflict to attack and kill enemy soldiers without warning, no such moral permission is available against criminal suspects in the peacetime context of law enforcement.⁴⁰ Also, whereas a police officer's use of force ought never to put the lives of innocent bystanders at risk, combatants guided by traditional military ethics may endanger civilians to a considerable extent on grounds of military necessity.⁴¹ Moreover, there is an established expectation that police ethics and military ethics will remain distinct in their application, even in extreme cases of collective

violence (such as a riot) in a domestic setting where local authorities might feel tempted to respond aggressively.⁴²

Other circumstances likely to warrant police possession and possible use of weapons include: shoot-outs between police and suspects during a bank robbery; the protection of government officials or foreign dignitaries; a police officer's chance encounter of a violent crime in progress; domestic violence involving emotionally disturbed individuals; sieges involving armed hostage-takers; and interceptions of suspected suicide bombers.

Regardless of circumstances, however, the practice of policing is governed morally and fundamentally by respect for individual human rights and especially the right to life. Or, at least, this is how policing *ought* to be governed, according to a liberal notion of "policing" that assumes that human rights are universal. It must be acknowledged that, in many illiberal societies throughout the world, policing (including forceful policing) is geared less toward serving and protecting members of a policed community and more toward the (violent) domination of the population. In non-democracies, police are ethically disadvantaged by the fact that their position and role in society is not ultimately authorized by the people. This means that, instead of being democratically empowered to treat citizens with equal respect, those police find themselves bound instead to serve only a ruling elite which deploys them against domestic opposition groups. Police in this position are more liable to be regarded as "enemies" rather than "servants" of the people.⁴³ Here, the

moral distinction between policing and warring is most vulnerable to breaking down, making unethical police use of force (involving an armed drone or otherwise) more likely to occur.

The moral importance of protecting human life is reflected in numerous international laws, and the most relevant of these for present purposes is Article 2 of the 1950 European Convention on Human Rights (ECHR):

- (1) Everyone's right to life shall be protected by law. No one shall be deprived of his life intentionally save in the execution of a sentence of a court following his conviction of a crime for which this penalty is provided by law.
- (2) Deprivation of life shall not be regarded as inflicted in contravention of this Article when it results from the use of force which is no more than absolutely necessary:
 - (a) in defence of any person from unlawful violence;
 - (b) in order to effect a lawful arrest or to prevent the escape of a person lawfully detained;
 - (c) in action lawfully taken for the purpose of quelling a riot or insurrection.⁴⁴

Other than setting these broad categories of circumstances in which force may be used if "absolutely necessary," international treaty law offers no further guidance for police action. This can rather be found in two influential "soft law" documents drafted by law enforcement and human rights experts: the *Code of Conduct for Law Enforcement Officials*,⁴⁵ and the *Basic Principles on the*

Use of Force and Firearms by Law Enforcement Officials.⁴⁶ The *Code of Conduct* reinforces the ECHR's "necessity" principle: "Law enforcement officials may use force only when strictly necessary and to the extent required for the performance of their duty."⁴⁷ And the *Basic Principles* address this principle along with four other principles to guide police use of force: legality, precaution, proportionality and accountability.

Together, these interrelated principles establish a five-stage test applicable to any instance of police use of force: (1) whether force is being used in accordance with a domestic legal framework that satisfies the international human rights law prohibition of arbitrary killings (the legality principle); (2) whether, when planning and initially organizing a police operation, the state seeks to minimize the possibility of recourse to lethal force as well as death and injury (the precaution principle); (3) whether it is absolutely necessary at the time for police to use a certain kind and degree of force to achieve a legitimate objective (the necessity principle); (4) whether the anticipated harm caused by police to the suspect and to bystanders is proportionate (not excessive) in comparison to the seriousness of the threat posed and the legitimate objective to be achieved (the proportionality principle); and (5) whether, if police caused serious injury or death, the state conducted an effective investigation of how this happened (the accountability principle).⁴⁸

For present purposes, the principles of legality and accountability are not of central concern because these are essentially procedural in

nature. Although it is morally important to establish sets of legally binding expectations for police use of force (legality) and for actual uses to be assessed (accountability), the content of those expectations and assessments is critically informed by the three substantive principles: necessity, proportionality and precaution.

The principle of necessity imposes a duty upon police to act non-violently wherever possible, to use force only for a legitimate purpose (for example, in self- or other-defence), and to use only as much force as is reasonable in particular circumstances.⁴⁹ According to Christof Heyns (a former UN Special Rapporteur on extrajudicial, summary, or arbitrary executions), "necessity" is a qualitative, quantitative and temporal concept.⁵⁰ A given use of force by police is qualitatively necessary if no other means (non-violent or less harmful) is available to achieve a legitimate objective. The amount of force is quantitatively necessary if it does not exceed the amount required to achieve that objective. And the use of force is temporally necessary if it must be used quickly (within "seconds, not hours") against a person who presents an immediate threat.⁵¹ When the instrument of force to be used is potentially lethal (a firearm, for example), the necessity threshold is very high: its use must be "strictly unavoidable in order to protect life."⁵²

The latter requirement relates also to proportionality: the principle that the amount of force used, and its potential to cause harm, must be strictly proportionate to the seriousness of the crime and the legitimate objective to be achieved.⁵³

Accordingly, only the most serious of threats (potential loss of life) warrant the most serious (potentially lethal) uses of force by police. Preparing to use a certain type and degree of force “proportionally” thus involves a balancing of the risks posed by a criminal suspect against the potential harm to that individual as well as to anyone else nearby. Force is or can become disproportionate where the harm caused outweighs the advantages of its use.⁵⁴ So, for example, shooting a firearm at a fleeing thief who poses no immediate danger to anyone is impermissible,⁵⁵ as is any police policy allowing lethal force to be used for a purpose other than to protect life.⁵⁶ Importantly, the proportionality principle is protective also of bystanders who might become unintended victims of police use of force. A bullet fired at a suspect on a street could pass through their body and hit someone else. So, as a matter of proportionality, police are generally permitted to use low velocity, expanding bullets which minimize the risk to bystanders from “over-penetration.”⁵⁷

When force is used, the principles of necessity and proportionality are more likely to be satisfied where policing operations have been carefully planned in a way that minimizes the risk (to everyone involved) of death or injury.⁵⁸ Such planning is required by the principle of precaution which serves as a further safeguard of the human right to life. Taking reasonable precautions to respect life and prevent harm includes, for example: training police officers in the proper use of a variety of forceful techniques and instruments; requiring them (when

appropriate) to issue a clear warning before using force; and ensuring that medical assistance is promptly available to potential victims.⁵⁹ Such precautions arrangements can be contrasted with operational plans that effectively lock police into taking forceful action, thereby potentially escalating criminal violence and risking a greater amount of injury and death.

The satisfaction of all three of the above principles is, in practice, supported by the “differentiated” use of force. Ethical policing therefore critically involves the equipping of police with “various types of weapons and ammunition,” including “non-lethal incapacitating weapons for use in appropriate situations.”⁶⁰ So equipped, an officer is able to “choose from a range of instruments and techniques to use force in order to opt for the least intrusive and most proportional one in the circumstances to achieve the legitimate policing objective.”⁶¹ This means also that, where non-violent policing measures have been or are likely to be ineffective, the level of force used (ranging in effect from uncomfortable to injurious to deadly) can be “escalated as gradually as possible.”⁶² In the policing of a public assembly which has turned violent, for example, it might sometimes be ethically appropriate to apply “less-lethal” force in the form of chemical irritants, electroshock weapons, rubber or plastic bullets, or water cannons.⁶³ Here, a key rationale for choosing these kinds of weapons is to reduce the risk of escalating the violence by avoiding the spectacle of fatalities. By contrast, when police encounter a suspected suicide bomber in a crowded place, a rapid resort to

lethal weaponry might be justified if mass casualties from an exploding such force is the only way to prevent bomb.⁶⁴

Ethical Force and the Tele-Present Police Officer

When the platform for a weapon is a camera-equipped drone, the police user of force acts at a distance from a suspect. Yet the idea of distanced policing is already familiar in many parts of the world from the perspective of ordinary citizens. Technological changes have caused increasing police remoteness from the public as staffed desks and stations have given way to telephone and online services.⁶⁵ Now, drone technology, too enables police officers to spend less time interacting with citizens. This gives rise to broad concerns that such physical

alienation might desensitize police to the concerns of the public,⁶⁶ and that police remoteness is inconsistent with a “serve and protect” ethos.⁶⁷ If, in addition, an officer’s “tele-presence” were extended to the use of force,⁶⁸ satisfying ethical policing principles (necessity, proportionality, and precaution) could be challenging. In considering that challenge, at least three factors are important: the reduction of risk to police; the quality of their drone-based perception of criminal threats; and the potential for weaponized drones to escalate public disorder.

Police Risk and Self-Defense

The most obvious and immediate advantage of deploying a police drone, instead of a police officer, into a dangerous situation is that it spares that officer from exposure to physical risk. Risk avoidance is itself morally important because governments have a duty to protect the human rights of their police personnel. The provision of adequate training and equipment (including self-protective equipment), and the careful planning and command of police operations, helps to avoid the placing of officers in unnecessary danger.⁶⁹ It seems consistent with such efforts, then, to substitute a drone if its performance of a policing function is equivalent to (or better than) that of an on-scene officer. Less obvious, however, is whether

reducing the risk to police in this way—removing them physically from the tense environment of an unfolding crime—is also essentially protective of suspects and bystanders. In this regard, when it comes to the police use of force, is deploying a tele-present officer better because they are less likely to act desperately, or is it worse because they are less likely to perceive enough of what is going on?

The *Basic Principles* provide that, for the purpose of “restraining the application of means capable of causing death or injury to persons,” police should “be equipped with self-defence equipment such as shields, helmets, bullet-proof vests and bullet-proof means of transportation, *in order to* decrease the need

to use weapons of any kind.”⁷⁰ Thus, as a matter of ethical policing, reducing risk to police is supposed to reduce the likelihood of their resorting to force, to the ultimate benefit of the public being policed. This ideal of mutual risk reduction has been demonstrated, for example, in Northern Ireland where “a drastic reduction in the use of force” was achieved after police officers there were issued body-length shields and fireproof overalls.⁷¹

Similarly, one could argue, protecting the bodies of armed police by sometimes replacing them with armed drones is essentially precautionous and therefore ethically justified. A tele-present officer need not act in self-defense and, in being unexposed to danger, they cannot *fearfully* use a weapon. As Kyle Stelmack has argued, that officer would be spared “direct contact with environmental factors that lead to the stress and anxiety that often-times results in the use of force, especially excessive force.”⁷² From a safely remote position, and viewing imagery captured by their drone’s camera, police would perhaps have more opportunity to refrain from using force unless or until it would clearly be necessary and proportionate. And, in the meantime, a drone equipped with loudspeakers could broadcast an officer’s warning to a person acting dangerously to cease their actions, thus preserving the availability of a non-violent route to neutralizing a public safety threat. The overall effect, then, of raising the practical threshold for permissible use of force would be a reduction in the likelihood of force being used by police and of suspects or bystanders suffering harm.

Against this position, however, one could argue that drone-based reduction of risk to police would be detrimental to the public *because* an officer is not physically present. With regard to the precaution principle and the importance of differentiated force, a tele-present officer (being at no risk) would probably feel less pressured to escalate quickly toward the use of (lethal) weapons. Even so, the overall range of response options available to police would be reduced if an armed drone were deployed in place of an on-scene officer. The option of non-violently persuading a dangerous suspect to surrender to an immediate arrest is unavailable where police commanders have arranged for arrest-performing personnel to be kept at a distance. And a tele-present officer is also operationally locked out of using the various, less-lethal bodily techniques which are the most commonly used techniques in policing: for example, pushing with the palm of the hand or holding someone’s arm behind their back. In addition, the use of an armed drone renders impossible the police use of instruments including batons, truncheons, shields (to push someone) and handcuffs.⁷³ Instead, the application of force with a drone could only *begin* with the use of ranged instruments (such as tasers, rubber bullets, and sprayed chemicals) even though the circumstances of a police encounter might mean it is necessary and proportionate only to use milder techniques. Any temptation felt by police, then, to use force only as they can (rather than as they should) is one that would tend to make policing actions riskier (to suspects and bystanders) and therefore less justifiable.

Police Perception of Circumstances

In the application of bodily force, the on-scene officer can literally feel what they are doing to another person. And, prior to the use of any kind of force, potentially all of that officer's other senses can be engaged in the perception of circumstances. The idea of deploying armed police drones has been criticized, in this regard, as an inferior form of forceful policing because it affords the drone's remote operator an attenuated sense of the harm they are causing. Arguably, "being there" matters. The dangerousness of a situation might not be adequately assessable if, for example, a (potentially) violent suspect's demeanor cannot be observed up close.⁷⁴ And, to the extent that good perception relies upon police presence and proximity, a potential problem with the drone-based distancing of police officers is, as Jay Stanley suggests, that "their judgment about when to apply force is more likely to be flawed... and excessive amounts of force are more likely to be applied."⁷⁵

In the United States, some scholars have considered the potential police use of a drone-based weapon from the perspective of whether this would legally constitute a "reasonable seizure."⁷⁶ The US Constitution's Fourth Amendment provides that "[t]he right of the people to be secure in their persons... against unreasonable searches and seizures, shall not be violated." Sometimes, when US police have been accused of using excessive force in attempting to apprehend a suspect, such force has been alleged to be an unreasonable seizure in violation of the

Fourth Amendment. In the case of *Graham v. Connor*, the US Supreme Court established the constitutional standard that "governs a free citizen's claim that law enforcement officials used excessive force in the course of making an arrest... or other 'seizure' of his person."⁷⁷ This standard is that "[t]he 'reasonableness' of a particular use of force must be judged from the perspective of a reasonable officer *on the scene*."⁷⁸ And, as the Court explained, "reasonableness must embody allowance for the fact that police officers are often forced to make split-second judgments—in circumstances that are tense, uncertain, and rapidly evolving—about the amount of force that is necessary in a particular situation."⁷⁹

If an armed, camera-equipped drone were the only police asset "on the scene," the legal question that would arise is whether the drone's controlling officer would be able to use force reasonably. According to a strict interpretation of the *Graham* standard, the defense of reasonableness is simply unavailable to any officer who uses force remotely rather than "on the scene."⁸⁰ From an ethical perspective, however, the broader issue is whether a tele-present officer would be sufficiently capable of judging whether a particular use of force would be necessary and proportionate under the circumstances. Could that officer, from a remote position, "truly assess the situation and administer the proper amount of force"?⁸¹ In some cases, discerning the truth of what is going on might be made easier by absencing

an at-risk officer from the scene and replacing them with a tele-present drone operator. For example, when it comes to police shooting mistakes, these have sometimes occurred when an observed suspect makes a sudden movement that is perceived as their reaching for a weapon. It later becomes known that the person was in fact reaching for a phone or other object, and a police officer's hasty resort to the use of a firearm is then explained by a concern for their own safety.⁸² Such a concern cannot arise if an officer is merely tele-present, in which case that officer could instead afford to refrain from the use of force while taking time to confirm the true nature of a suspect's observed actions.

Even so, there could still be operational pressure to use drone-based force (too) quickly for the sake of *other*-defense, and here the tele-present officer would still face an ethical challenge: to obtain (via their drone's camera) an *adequate* understanding of the severity of a criminal threat to human life and to decide what forceful response (if any) would be necessary and proportionate. In circumstances where the threat appeared to be of moderate severity and there were many bystanders visible on the scene, the perception deficit from reliance upon drone vision alone might militate against the swift resort to force. That is, a police decision-maker might decide it would be more precautionous to await the acquisition (by additional means) of a stronger understanding of the unfolding situation. A more urgent decision to use force might yet be justified, though, if a drone on the scene were transmitting imagery of a severe and ongoing

threat to life and there appeared to be no bystanders in the vicinity of a violent suspect.

If, for example, a lone sniper in a tall building were spotted firing on a crowd below, sending up an armed drone to neutralize that threat would likely be both necessary and proportionate. Or, in the presence of bystanders, the risk of bullet overpenetration (a proportionality problem) might be less if it is fired from a drone directly overhead (compared to an on-scene officer firing laterally),⁸³ although this could still present a ricochet risk (another proportionality problem) if the suspect is standing on a hard surface. In more complicated circumstances, the necessity and proportionality principles might be even harder to satisfy when an armed drone alone is used. Where a targeted hostage-taker is surrounded by hostages, using a drone-based weapon would present a greater proportionality challenge (the risk of police harm to innocents), just as would the presence of a suspected suicide bomber in a crowd. And, in both kinds of cases, the necessity of using force would arguably be more easily judged by an armed officer who is physically on the scene. That officer is in a better position to converse and negotiate with a hostage-taker (perhaps obviating the need for any police violence) and is able immediately to accept a surrender. Or, in encountering a suspected bomber, the on-scene officer is able to observe closely the suspect's demeanor and actions, and to bring a firearm quickly to within point-blank range (and less conspicuously than a drone can)⁸⁴ if lethal force becomes necessary. In such circumstances, for policing to be both

effective and ethical, officers need to be present (and thus at risk), because deploying a tele-present officer's drone instead would be a less suitable and less precautionous approach.

Escalation Risk

Precaution is just as important when police use of force is not intended to be lethal, and a police drone could also be armed with less-lethal weapons. As described earlier, the companies seeking to sell weaponized drones to law-enforcement authorities often emphasize the potential utility of this technology in the forceful policing of public assemblies. One envisaged scenario is that police could use a drone's weapons to control a large crowd's movement, "employing pepper spray or rubber bullets to prevent the crowd from moving past certain points."⁸⁵ Deploying tele-present officers to respond to a riot, for example, would obviate the need to expose on-scene officers to the risk of harm, and the former would not feel a need to act desperately in self-defense. Even so, an ethical problem that might yet remain is that this policing tactic carries too great a risk of escalating (worsening) the overall threat to public safety. Planning to use police drones forcefully against assemblies of people would, then, not be sufficiently precautionous with regard to protecting everyone's right to life.

In 2016 the UN Human Rights Council published a report on the proper management of assemblies, jointly authored by the Special Rapporteur on the rights to freedom of peaceful assembly and of association and the Special Rapporteur on extrajudicial, summary or arbitrary executions. The report advised that,

on the basis of a risk assessment, "equipment for law enforcement officials deployed during assemblies should include... appropriate less-lethal weapons," and it recommended police use of weapons and tactics which "allow for a graduated response and de-escalation of tensions."⁸⁶ With regard to the availability of a "growing range of weapons that are remote controlled," the report urged the exercise of "[g]reat caution" in the context of the policing of assemblies,⁸⁷ but it offered no detail on the meaning of this recommendation. Subsequently, guidance published by the UN Human Rights Commissioner recommended only that

*[l]ess-lethal weapons and related equipment that deliver force by remote control ... should be authorized only if, in the context of their intended or ordinary use, it can be ensured that such use would comply with international human rights law.*⁸⁸

The guidance did not, however, go on to explain how police drones armed with less-lethal weapons could be used in a necessary, proportionate, and precautionous way.

A good starting point for further considering this ethical challenge is the application of the precaution principle, which, in the planning of police operations, is important as an ethical precursor to satisfying the necessity and proportionality principles. For police commanders thinking of deploying drones during

public assemblies, there would probably be at least two kinds of escalation risk worth anticipating in operational policies and plans. In considering drones armed, for example, with riot-control chemicals (tear gas), commanders would need firstly to recall the potential for such weapons (delivered by any means) to cause a crowd to panic and perhaps stampede.⁸⁹ Secondly, they would need to consider any additional escalation risk associated specifically with police using *drones* as the means of weapon delivery.

From the perspective of the policed public, in the context of an assembly, the necessity of police wielding even less-lethal weapons

via drone might seem doubtful if no officers (requiring protection) are on the scene. And, because dispersed tear gas is inherently indiscriminate in generating debilitating effects, using drones for high-altitude dispersal might be (and appear) all the more excessive (disproportionate). It seems likely, moreover, that members of a crowd would react differently to drone use than they would to on-scene officers using force to control them. Perhaps, for example, a crowd's outrage and despair at being unable to "fight back" could add to whatever sense of grievance has inspired the assembly, thus leading to a worse escalation of violent disorder.

Conclusion

In anticipation of the possibility that armed drones will one day be used violently for domestic policing purposes, it is important now to be considering their ethical advantages and disadvantages. The relevant technology is available and, in the face of criminal threats to public safety, the idea of replacing on-scene police officers with tele-present ones has some merit. Reducing physical risk is important for its own sake and, to the extent that police who feel protected are less likely to use force excessively or at all, risk-reduction can be beneficial also to suspects and bystanders. Weapons controlled remotely, then, might less often be used in haste or desperation, in which case the arming of drones could be justified as enabling greater adherence to the ethical principles that guide police use of force. A critical uncertainty that remains, though, is whether the camera

mounted on an armed police drone would provide a tele-present officer with a sufficiently rich perception of events and circumstances. Where this is not the case, unnecessary and/or disproportionate uses of force by police might be more likely to occur because of misunderstandings and mistakes. Additionally, in the policing of an unfolding crime, substituting a drone for an on-scene officer could generate a precaution problem because the former is unable to apply the full spectrum of response options (non-violent and violent).

Beyond potential ethical problems related to police perception, the public perception of police is important to consider, too, and here police chiefs are right to be wary of worsening the worldwide public's poor opinion of drones in general.⁹⁰ In a public assembly context, police commanders might

be tempted to deploy drones armed with less-lethal weaponry, and indeed this approach to crowd-control is highlighted by some drone manufacturing companies. However, if the spectacle of police drones—faceless and aloft—made the officers using them seem aloof and untouchable, the associated

escalation risk could be the aggravation of an already angry crowd. Given that police equipment and tactics should tend to defuse rather than exacerbate confrontations, a plan to deploy armed drones in this way could be difficult to reconcile with the requirements of ethical policing.

Notes

[**Disclosure Statement:** No potential conflict of interest was reported by the author(s).]

[This work was supported by European Research Council (ERC) (grant number 771082).]

1 See Mulraney, "Predator Drone Used."

2 See Heilweil, "Members of Congress."

3 Ibid.

4 See Greenwood, "Can a Police Drone."

5 See Bernama, "MAF to Use Drone"; Lindberg and Murphy, "Drones Take to China's Skies"; Pidd and Dodd, "UK Police Use Drones"; Smith, "Greece to Use Drones."

6 See Gaulkin, "Drone Pandemic"; O'Carroll, "Covid-19"; Richardson, "'Pandemic Drones'"; Noack, "In Victory for Privacy."

7 See Stanley and Crump, *Protecting Privacy*; Talai, "Drones and Jones"; West and Bowman, "The Domestic Use"; Kiai and Heyns, *Joint Report*, para. 78.

8 See Amnesty International, *Key Principles*, 6.

9 See Casey-Maslen, "Pandora's Box," 597; Heyns, *Report of the Special Rapporteur* (2014), para. 136; Borrie, Finckh and Vignard, *Increasing Transparency*, 21.

10 See Alston, *Report of the Special Rapporteur*, para. 85.

11 Obama, "Remarks by the President."

12 See Engberts and Gillissen. "Policing from Above," 105.

13 See *ibid.*, 101–2.

14 See Ovalle, "From Above."

15 See Metz, "Police Drones."

16 See Prieve, "East Bay Police Department."

17 See Bump, "The Border Patrol."

18 See Chayka, "Watch This Drone."

19 See Kelion, "African Firm"; Smith, "Pepper-Spray Drone."

20 See Desert Wolf, "Skunk Riot Control Copter."

21 See *ibid.*

22 See Crowley, *Tear Gassing*, 28.

23 Hurst, "Indian Police."

24 See Della Cava, "Police Taser Drones Authorized." The legality of drone-based use of "non-lethal" weapons in North Dakota is implied by the legislative provision that: "[a] law enforcement agency may not authorize the use of...an unmanned aerial vehicle armed with any lethal weapons." H. 1328, 2015 Leg., 64th Sess. (N.D. 2015) (emphasis added).

25 See Brumfield, "Armed Drones," 554.

26 Elinson, "Taser Explores Concept."

27 See Thielman, "Use of Police Robot."

28 See Dunne, "Bill Could See Connecticut Police."

29 See McNabb, "Connecticut Decides."

30 See: Balko, *Rise of the Warrior Cop*; Holmqvist, *Policing Wars*.

- 31 Shaw, *Predator Empire*, 22.
- 32 Salter, "Toys for the Boys," 164.
- 33 Davis, "Theorizing the Advent," 344. See also: Bourne, "Police Militarisation Takes Off"; Stanley, "Five Reasons"; Gaggioli, "Remoteness," 148.
- 34 Punch, *Shoot to Kill*, 77.
- 35 See Joh, "Policing Police Robots"; Barrett, "The Pentagon's Hand-Me-Downs."
- 36 See Greenwood, "Can a Police Drone."
- 37 See Valdovinos, Specht, and Zeunik, *Law Enforcement*, 1.
- 38 International Association of Chiefs of Police. "Unmanned Aircraft."
- 39 International Association of Chiefs of Police, "Recommended Guidelines," 2.
- 40 A possible exception arises when police encounter a suspected suicide bomber who, upon hearing a police warning, might respond by instantly detonating the bomb.
- 41 See Miller, *Shooting to Kill*, 11.
- 42 See United Nations, "Basic Principles," Principle 8: "Exceptional circumstances such as internal political instability or any other public emergency may not be invoked to justify any departure from these basic principles."
- 43 See Prenzler, *Ethics and Accountability*, 30.
- 44 European Court of Human Rights, "Convention," Article 2.
- 45 See United Nations, "Code of Conduct."
- 46 See United Nations, "Basic Principles."
- 47 United Nations, "Code of Conduct," Article 3.
- 48 See Gaggioli, "Lethal Force and Drones," 105.
- 49 See United Nations, "Basic Principles," Principle 4.
- 50 See Heyns, *Report of the Special Rapporteur* (2014), para. 60.
- 51 See *ibid.*, para. 59.
- 52 United Nations, "Basic Principles," Principle 9.
- 53 See United Nations, "Basic Principles," Principle 5.
- 54 See United Nations, *Resource Book*, 18.
- 55 See Heyns, *Report of the Special Rapporteur* (2014), para. 72.
- 56 See United Nations, *Resource Book*, 22. See also Associated Press, "'If It's Drugs.'"
- 57 United Nations, *Resource Book*, 97.
- 58 See United Nations, "Basic Principles," Principle 3.
- 59 See Heyns, *Report of the Special Rapporteur* (2014), para. 51; United Nations, *Resource Book*, 20.
- 60 United Nations, "Basic Principles," Principle 2.
- 61 United Nations, *Resource Book*, 18.
- 62 Heyns, *Report of the Special Rapporteur* (2014), para. 61.
- 63 Although the *Basic Principles* refer to "non-lethal incapacitating weapons," the term "less-lethal" is now widely preferred, because the latter term acknowledges that these instruments can be lethal (to suspects and bystanders) in cases of misuse or malfunction, or where a victim's underlying health condition makes them more vulnerable to a weapon's effect. See United Nations, *Resource Book*, 66 (note 145).
- 64 See Miller, *Shooting to Kill*, 139; United Nations, *Resource Book*, 22.
- 65 See McGuire, "The Laughing Policebot," 27.
- 66 See Valdovinos, Specht, and Zeunik, *Law Enforcement*, 2.
- 67 See Gaggioli, "Remoteness," 134.
- 68 See Sharkey, "Are We Prepared."
- 69 See United Nations, *Resource Book*, 15.
- 70 United Nations, "Basic Principles," Principle 2 (emphasis added).

71 See Heyns, *Report of the Special Rapporteur* (2011), para. 104.

72 Stelmack, "Weaponized Police Drones," 286.

73 See: United Nations, *Resource Book*, 65–6.

74 See Stelmack, "Weaponized Police Drones," 286.

75 Stanley, "Five Reasons."

76 See Brumfield, "Armed Drones"; Stelmack, "Weaponized Police Drones"; Porter, "Law Enforcement's Use."

77 *Graham v. Connor et al.*, 490 U.S. 386, 388 (1989).

78 *Ibid.* (emphasis added).

79 *Ibid.*

80 See Brumfield, "Armed Drones," 565–6.

81 Porter, "Law Enforcement's Use," 70.

82 See United Nations, *Resource Book*, 70.

83 The author thanks an anonymous reviewer for raising this point.

84 In a suicide bomber or "active shooter" scenario, when an identified suspect poses an immediate threat to life and there are no other means available to neutralize the threat, a police officer may follow a "shoot-to-kill" order: See Casey-Maslen, "Pandora's Box," 618; United Nations, *Resource Book*, 22. In 2005 the former Commissioner of London's Metropolitan Police, Lord Stevens, told UK journalists the "terrible truth" that the only way to stop a suicide bomber was to "destroy his brain instantly, utterly." BBC, "Debate Rages."

85 See Stelmack, "Weaponized Police Drones," 280.

86 Kiai and Heyns. *Joint Report*, para. 53.

87 *Ibid.*, para. 56.

88 See United Nations, *United Nations Human Rights Guidance*, 15.

89 See United Nations, *Resource Book*, 88; United Nations, *United Nations Human Rights Guidance*, 24.

90 See International Association of Chiefs of Police, "Recommended Guidelines"; International Association of Chiefs of Police, "Unmanned Aircraft."

ORCID

Christian Enemark  <http://orcid.org/0000-0002-1833-0927>

Bibliography

Alston, Philip. *Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions*. A/HRC/14/24/Add.6 (May 28, 2010). New York: Human Rights Council, United Nations General Assembly, 2010.

Amnesty International. *Key Principles on the Use and Transfer of Armed Drones*. London: Amnesty International, 2017.

Associated Press. "'If It's Drugs, You Shoot and Kill,' Duterte Orders Philippine Custom Chief." *The Guardian*, September 2020. <https://www.theguardian.com/world/2020/sep/01/if-its-drugs-you-shoot-and-kill-duterte-orders-philippine-custom-chief>.

Balko, Radley. *Rise of the Warrior Cop: The Militarization of America's Police Forces*. New York: Public Affairs, 2013.

Barrett, Brian. "The Pentagon's Hand-Me-Downs Helped Militarize Police. Here's How." *Wired*, June 2, 2020. <https://www.wired.com/story/pentagon-hand-me-downs-militarize-police-1033-program/>.

BBC. "Debate Rages Over 'Shoot-to-Kill'." *BBC News*, July 24, 2005. <http://news.bbc.co.uk/1/hi/uk/4711769.stm>.

Bernama. "MAF to Use Drone, UAV to Monitor MCO Compliance." *The Malaysian Reserve*, March 23, 2020. <https://themalaysianreserve.com/2020/03/23/maf-to-use-drone-uav-to-monitor-mco-compliance/>.

Borrie, John, Elena Finckh, and Kerstin Vignard. *Increasing Transparency, Oversight and Accountability of Armed Unmanned Aerial Vehicles*. Geneva: United Nations Institute for Disarmament Research, 2017.

- Bourne, Kylie. "Police Militarisation Takes Off with Weaponised Crowd-Control Drones." *The Conversation*, September 14, 2015. <https://theconversation.com/police-militarisation-takes-off-with-weaponised-crowd-control-drones-46744>.
- Brumfield, Eric. "Armed Drones for Law Enforcement: Why It Might Be Time to Re-Examine the Current Use of Force Standard." *McGeorge Law Review* 46, no. 3 (2014): 543–72.
- Bump, Philip. "The Border Patrol Wants to Arm Drones." *The Atlantic*, July 2, 2013. <https://www.theatlantic.com/national/archive/2013/07/border-patrol-arm-drones/313656/>.
- Casey-Maslen, Stuart. "Pandora's Box? Drone Strikes under *Jus ad Bellum*, *Jus in Bello*, and International Human Rights Law." *International Review of the Red Cross* 94, no. 886 (2012): 597–625.
- Chayka, Kyle. "Watch This Drone Taser a Guy Until He Collapses." *Time*, March 11, 2014. <https://time.com/19929/watch-this-drone-taser-a-guy-until-he-collapses/>.
- Crowley, Michael. *Tear Gassing by Remote Control: The Development and Promotion of Remotely Operated Means of Delivering or Dispersing Riot Control Agents*. London: Oxford Research Group, 2015.
- Davis, Oliver. "Theorizing the Advent of Weaponized Drones as Techniques of Domestic Paramilitary Policing." *Security Dialogue* 50, no. 4 (2019): 344–60.
- Della Cava, Marco. "Police Taser Drones Authorized in N.D." *USA Today*, August 28, 2015. <https://eu.usatoday.com/story/tech/2015/08/28/police-taser-drones-authorized-north-dakota/71319668/>.
- Desert Wolf. "Skunk Riot Control Copter." Accessed January 5, 2021. <http://www.desert-wolf.com/dw/products/unmanned-aerial-systems/skunk-riot-control-copter.html>.
- Dunne, Daisy. "Bill Could See Connecticut Police Use Drones Armed with Lethal Weapons in a First for the US." *Daily Mail*, March 31, 2017. <https://www.dailymail.co.uk/sciencetech/article-4367266/Armed-police-drones-legalized-Connecticut.html>.
- Elinson, Zusha. 2016. "Taser Explores Concept of Drone Armed with Stun Gun for Police Use." *Wall Street Journal*, October 20. <https://www.wsj.com/articles/taser-explores-concept-of-drone-armed-with-stun-gun-for-police-use-1476994514>.
- Engberts, Bart, and Edo Gillissen. "Policing from Above: Drone Use by the Police." In *The Future of Drone Use: Opportunities and Threats from Ethical and Legal Perspectives*, edited by Bart Custers, 93–113. The Hague: TMC Asser Press, 2016.
- European Court of Human Rights. "Convention for the Protection of Human Rights and Fundamental Freedoms." Rome, November 4, 1950. <https://www.echr.coe.int/Pages/home.aspx?p=basictexts&c>.
- Gaggioli, Gloria. "Lethal Force and Drones: The Human Rights Question." In *Legitimacy and Drones: Investigating the Legality, Morality and Efficacy of UCAVs*, edited by Steven J. Barela, 91–115. New York: Routledge, 2017.
- Gaggioli, Gloria. "Remoteness and Human Rights Law." In *Research Handbook on Remote Warfare*, edited by Jens David Ohlin, 133–85. Cheltenham: Edward Elgar, 2017.
- Gaulkin, Thomas. "Drone Pandemic: Will Coronavirus Invite the World to Meet Big Brother?" *Bulletin of the Atomic Scientists*, April 1, 2020. <https://thebulletin.org/2020/04/drone-pandemic-will-coronavirus-invite-the-world-to-meet-big-brother>.
- Greenwood, Faine. "Can a Police Drone Recognize Your Face?" *Slate*, July 8, 2020. <https://slate.com/technology/2020/07/police-drone-facial-recognition.html>.
- Heilweil, Rebecca. "Members of Congress Want to Know More about Law Enforcement's Surveillance of Protesters." *Vox*, June 10, 2020. <https://www.vox.com/recode/2020/5/29/21274828/drone-minneapolis-protests-predator-surveillance-police>.
- Heyns, Christof. *Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions*. A/HRC/17/28 (May 23, 2011). New York: Human Rights Council, United Nations General Assembly, 2011.
- Heyns, Christof. *Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions*. A/HRC/26/36 (April 1, 2014). New York: Human Rights Council, United Nations General Assembly, 2014.
- Holmqvist, Caroline. *Policing Wars: On Military Intervention in the Twenty-First Century*. Basingstoke: Palgrave Macmillan, 2014.
- Hurst, Luke. "Indian Police Buy Pepper Spraying Drones to Control 'Unruly Mobs.'" *Newsweek*, April 7, 2015. <https://www.newsweek.com/pepper-spraying-drones-control-unruly-mobs-say-police-india-320189>.
- International Association of Chiefs of Police. "Recommended Guidelines for the Use of

- Unmanned Aircraft." August 2012. https://www.theiacp.org/sites/default/files/all/i-j/IACP_UAGuidelines.pdf.
- International Association of Chiefs of Police. "Unmanned Aircraft." April 2019. <https://www.theiacp.org/resources/policy-center-resource/unmanned-aircraft>.
- Joh, Elizabeth E. "Policing Police Robots." *UCLA Law Review*, November 2, 2016. <https://www.uclalawreview.org/policing-police-robots/>.
- Kelion, Leo. "African Firm Is Selling Pepper-Spray Bullet Firing Drones." *BBC News*, June 18, 2014. <https://www.bbc.co.uk/news/technology-27902634>.
- Kiai, Maina, and Christof Heyns. *Joint Report of the Special Rapporteur on the Rights to Freedom of Peaceful Assembly and of Association and the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions on the Proper Management of Assemblies*. A/HRC/31/66 (February 4, 2016). New York: Human Rights Council, United Nations General Assembly, 2016.
- Lindberg, Kari Soo, and Colum Murphy. "Drones Take to China's Skies to Fight Coronavirus Outbreak." *Bloomberg*, February 4, 2020. <https://www.bloomberg.com/news/articles/2020-02-04/drones-take-to-china-s-skies-to-fight-coronavirus-outbreak>.
- McGuire, M. R. "The Laughing Policebot: Automation and the End of Policing." *Policing & Society* 31, no. 1 (2021): 20–36.
- McNabb, Miriam. "Connecticut Decides Against 'Weaponized' Drones for Law Enforcement." *Dronelife*, May 2, 2017. <https://dronelife.com/2017/05/02/connecticut-decides-weaponized-drones-law-enforcement/>.
- Metz, Cade. "Police Drones Are Starting to Think for Themselves." *New York Times*, December 7, 2020.
- Miller, Seumas. *Shooting to Kill: The Ethics of Police and Military Use of Lethal Force*. New York: Oxford University Press, 2016.
- Mulraney, Frances. "Predator Drone Used for Tracking and Killing Terrorists in Middle East Is Flown over Minneapolis to Record Protests Despite Ban on It Flying That Far." *Daily Mail*, May 30, 2020. <https://www.dailymail.co.uk/news/article-8371301/Predator-drone-usually-used-tracking-killing-terrorists-flown-Minneapolis.html>.
- Noack, Rick. "In Victory for Privacy Activists, France Is Banned from Using Drones to Enforce Coronavirus Rules." *Washington Post*, January 14, 2021. https://www.washingtonpost.com/world/in-victory-for-privacy-activists-france-is-banned-from-using-drones-to-enforce-covid-rules/2021/01/14/b384eb40-5658-11eb-acc5-92d2819a1ccb_story.html.
- Obama, Barack. "Remarks by the President at the National Defense University." May 23, 2013. The White House. <https://obamawhitehouse.archives.gov/the-press-office/2013/05/23/remarks-president-national-defense-university>.
- O'Carroll, Lisa. "Covid-19: Ex-Supreme Court Judge Lambasts 'Disgraceful' Policing." *The Guardian*, March 30, 2020. <https://www.theguardian.com/world/2020/mar/30/covid-19-ex-supreme-court-judge-lambasts-disgraceful-policing>.
- Ovalle, David. "From Above, Miami-Dade Police Drone Recorded Crack Cocaine Sale Live. It's a First, Cops Say." *Miami Herald*, January 16, 2020. <https://www.miamiherald.com/news/local/crime/article239246988.html>.
- Pidd, Helen, and Vikram Dodd. "UK Police Use Drones and Roadblocks to Enforce Lockdown." *The Guardian*, March 26, 2020. <https://www.theguardian.com/world/2020/mar/26/uk-police-use-drones-and-roadblocks-to-enforce-lockdown>.
- Porter, Amanda A. "Law Enforcement's Use of Weaponized Drones: Today and Tomorrow." *Saint Louis University Law Journal* 61, no. 2 (2017): 351–70.
- Prenzler, Tim. *Ethics and Accountability in Criminal Justice: Towards a Universal Standard*. 1st ed. Brisbane: Australian Academic Press, 2009.
- Prieve, Judith. "East Bay Police Department Adds Drones to Crime-Fighting Arsenal." *The Mercury News*, July 20, 2019. <https://www.mercurynews.com/2019/07/20/east-bay-police-department-adds-drones-to-its-crime-fighting-arsenal/>.
- Punch, Maurice. *Shoot to Kill: Police Accountability, Firearms and Fatal Force*. Bristol: Policy Press, 2011.
- Richardson, Michael. "'Pandemic Drones': Useful for Enforcing Social Distancing, or for Creating a Police State?" *The Conversation*, March 31, 2020. <https://theconversation.com/pandemic-drones-useful-for-enforcing-social-distancing-or-for-creating-a-police-state-134667>.
- Salter, Michael. "Toys for the Boys? Drones, Pleasure and Popular Culture in the Militarisation of Policing." *Critical Criminology* 22, no. 2 (2014): 163–77.

- Sharkey, Noel. "Are We Prepared for More Killer Police Robots?" *The Guardian*, July 12, 2016. <https://www.theguardian.com/commentisfree/2016/jul/12/killer-police-robots-legal-consequences-dallas>.
- Shaw, Ian G. R. *Predator Empire: Drone Warfare and Full Spectrum Dominance*. Minneapolis: University of Minnesota Press, 2016.
- Smith, David. "Pepper-Spray Drone Offered to South African Mines for Strike Control." *The Guardian*, June 20, 2014. <https://www.theguardian.com/world/2014/jun/20/pepper-spray-drone-offered-south-african-mines-strike-control>.
- Smith, Helena. "Greece to Use Drones to Stop Crowds Gathering for Orthodox Easter." *The Guardian*, April 17, 2020. <https://www.theguardian.com/world/2020/apr/17/greece-to-use-drones-to-stop-crowds-gathering-for-orthodox-easter-covid-19>.
- Stanley, Jay. "Five Reasons Armed Domestic Drones are a Terrible Idea." *American Civil Liberties Union*, August 27, 2015. <https://www.aclu.org/blog/privacy-technology/surveillance-technologies/five-reasons-armed-domestic-drones-are-terrible>.
- Stanley, Jay, and Catherine Crump. *Protecting Privacy from Aerial Surveillance: Recommendations for Government Use of Drone Aircraft*. New York: American Civil Liberties Union, 2011.
- Stelmack, Kyle. "Weaponized Police Drones and Their Effect on Police Use of Force." *Pittsburg Journal of Technology Law & Policy* 15, no. 2 (2015): 276–92.
- Talai, Andrew B. "Drones and Jones: The Fourth Amendment and Police Discretion in the Digital Age." *California Law Review* 102, no. 3 (2014): 729–80.
- Thielman, Sam. "Use of Police Robot to Kill Dallas Shooting Suspect Believed to be First in US History." *The Guardian*, July 8, 2016. <https://www.theguardian.com/technology/2016/jul/08/police-bomb-robot-explosive-killed-suspect-dallas>.
- United Nations. "Basic Principles on the Use of Force and Firearms by Law Enforcement Officials." Adopted by the Eighth United Nations Congress on the Prevention of Crime and the Treatment of Offenders, Havana, Cuba, 27 August to 7 September 1990. Office of the High Commissioner for Human Rights. <https://www.ohchr.org/en/professionalinterest/pages/useofforceandfirearms.aspx>.
- United Nations. "Code of Conduct for Law Enforcement Officials." Adopted by General Assembly Resolution 34/169. December 17, 1979. Office of the High Commissioner for Human Rights. <https://www.ohchr.org/EN/ProfessionalInterest/Pages/LawEnforcementOfficials.aspx>.
- United Nations. *Resource Book on the Use of Force and Firearms in Law Enforcement*. New York: United Nations Office on Drugs and Crime and Office of the United Nations High Commissioner for Human Rights, 2017.
- United Nations. *United Nations Human Rights Guidance on Less-Lethal Weapons in Law Enforcement*. New York: Office of the High Commissioner for Human Rights, United Nations, 2020.
- Valdovinos, Maria, James Specht, and Jennifer Zeunik. *Law Enforcement & Unmanned Aircraft Systems (UAS): Guidelines to Enhance Community Trust*. Washington, DC: Office of Community Oriented Policing Services, US Department of Justice, 2016.
- West, Jonathan P., and James S. Bowman. "The Domestic Use of Drones: An Ethical Analysis of Surveillance Issues." *Public Administration Review* 76, no. 4 (2016): 649–59.